SAN BERNARDINO MICROWAVE SOCIETY, Incorporated

FOUNDED IN 1955

A NON-PROFIT AMATEUR TECHNICAL ORGANIZATION DEDICATED TO THE ADVANCEMENT OF COMMUNICATIONS ABOVE 1000 MC.

W6IFE Newsletter

May 2012 Edition

President Chris Shoaff, N9RIN 2911 Calle Heraldo San Clemente CA 92673 949-388-3121 cshoaff@yahoo.com
Vice President Brian Thorson, AF6NA 7467 Country Fair Dr. Corona CA 92880 909-226-2015 brian.thorson@sce.com
Recording Sec Walter Clark 824 Valley View 714-738-3686 walterclark@adelphia.net
Corresponding Sec Jeff Fort KN6VR 10245 White Road Phelan CA 92371 909-994-2232 jnjfort@Verizon.net
Treasurer Dick Bremer, WB6DNX 1664 Holly St Brea CA 92621 714-529-2800 rabremer@sbcglobal.net
Editor Bill Burns, WA6QYR 247 Rebel Rd Ridgecrest, CA 93555 760-375-8566 bburns@ridgenet.net
Webmaster Dave Glawson, WA6CGR 1644 N. Wilmington Blvd Wilmington, CA 90744 310-977-0916 wa6cgr@ham-radio.com
ARRL Interface Frank Kelly, WB6CWN PO Box 1246, Thousand Oaks, CA 91358 805 558-6199 fm.kelly@verizon.net
W6IFE License Trustee Ed Munn, W6OYJ 6255 Radcliffe Dr. San Diego, CA 92122 858-453-4563 remunn@earthlink.net.
SBMS webmaster and Lab manager Dave Glawson, WA6CGR 1644 N Wilmington Blvd Wilmington, CA 90744 310-977-0916

At the **May 3, 2012 SBMS meeting** will have someone talk about something. The SBMS meets at the American Legion Hall 1024 Main Street (south of the 91 freeway) in Corona, CA at 1900 hours local time on the first Thursday of each month.

Last meeting- Courtney, N5BF/6 talked about the microwave systems on the NASA Grail pair of satellites in orbit of the moon. There is a similar system in orbit of the earth called Grace. Great talk Courtney. Thanks. The projection screen was installed at the American Legion. Officer elections will be in at the May meeting. All but Brian have agreed to stay on for another year. The Makers Fair in the Bay area will be on May 19/20 with a booth for microwave. Dennis W6DQ and Dave WA6CGR plan to go to the Fair. 21 people present.

Scheduling:
May 5-6 SBMS 2 GHz and Up Club Contest
May 26-27 Dubus EME 1.2 GHz 00-24z
June 9-10 ARRL June VHF QSO Party
June 23-24 Dubus EME 5.7 GHz 00-24z
June 24-27 Society of Amateur Radio Astronomers 2012 Conference National Radio Astronomy Observatory Green Bank, WV. www.radio-astronomy.org
August 4-5 ARRL August UHF Contest
August 18-19 ARRL 10 GHz and Up contest part 1
August 16-19, 2012 The 15th International EME Conference in Cambridge, England.
September 8-10 ARRL September VHF QSO Party
September 15-16 ARRL 10 GHz and Up Contest part 2
October 18-21 Microwave Update 2012 in Santa Clara Biltmore Hotel

Wants and Gots for sale.

For Sale: 30w 1296 MHz PA kit $50 + $5 for US shipping Chris Shoaff, N9RIN cshoaff@yahoo.com

For Sale: 10 GHz slotted waveguide antennas $55 kit, $80 assembled plus shipping Dan W6DFW W6DFW@apex-scientific.com

For Sale: table mounted wood router $15; 8 ft solid aluminum dish, $50 (can transport to your site for mileage.); 6 ft fiberglass dish free; 7.5 ft TVRO dish free; 6ft motorized Az/El RV TVRO dish with control box $10; 10 ft TVRO mesh dish free; Roll-a-round Sampson camera mount with quickset head $25 Bill WA6QYR bburns@ridgenet.net 760-375-8566.

For Sale- lots of microwave stuff. Let me know what you need. John KJ6HZ 951-288-1207.

Wanted- HP854 and or 8555 plug-ins for a HP141T main frame. Jason W6IEE W6IEE.73@gmail.com.

For Sale – new SMA attenuators DC-18 GHz 6dB and 20 dB $5 each Dick 714-529-2800 rabremer@juno.com.

Wanted- Macom 2 foot dish with feed or Prod line dish with feed Chuck N6EQ N6eq@juno.com.

Want wr75 to SMA adapter, need 2, Dick, WB6DNX 714-529-2800 rabremer@juno.com.

Activity reports: Dick, WB6DNX tested the 24 GHz onmi built by Dan W6DFW; Chuck WA6EXV is working on a beacon power supply; Bill WA6QYR measured the noise figure of his 10 GHz rig with disappointing results; Ed W6OYJ reported the San Diego beacons have been up and down with local power sources; Dennis, W6DQ worked on some radios; Wayne, N6NB did some roving in Texas; Marty, N6VI reported the ARRL has band plans for 902 and 3 GHz with 2 GHz in works; John, KJ6HZ is building his 10 GHz rig; Courtney, N5BF worked on his 1296 rig; Mel WA6JBD made a microwave talk at the Cactus meeting; Jeff, KN6VR did some 1296 antenna work; Dick, WB6JDH hopes to have his DX-60 transmitter on the air soon; Jason, W6IEE moved a router into the ham bands on 2 GHz; Dan W6DFW built some more 10 GHz Omni antennas; Larry, K6HLH put his tower back up and the 10 GHz is working; Pat, N6RMJ worked on his 10 GHz rig; Brian AF6NA did some antenna work; Chris, N9RIN is working on an oscillator for a beacon; ATV had 7 internet check ins, K6BXt and W6HYH check in.

I am starting up a kit making service for assembling certain kits made by Down east Microwave. For those that do not want to make their own kits or maybe it's gotten too difficult, or just don't have the time or want assembled kit faster than DEMI can supply it. This one-man business so I will only be able to build a limited number per month. My price is the same as offered by DEMI assembled, plus shipping which should be medium-size flat-rate priority mail in the US. I am expecting to be able to deliver within 30 days of receipt of paid order. I am not carrying any inventory so this allows shipping time to obtain kits and any other materials, and time to test the finished product plus ship to the customer. At this time I am limiting this to the VHF/UHF 25w Transceiver kits. In a couple months I hope to add three amplifier kits from Communications Concepts, Inc. If there is a something special you want assembled contact me. My professional credentials are at: http://www.kl7uw.com/60NE.htm Ed Cole

There has been some interest in connecting to the SBMS meetings that appear on the internet. Try this: http://www.batc.tv/ch_live.php?ch=2&id=139

Pat, N6RMJ lowers the screen at the SBMS meeting after many months of waiting for its installation.

Anyone had luck building a Dummy Load for WR-42 and higher frequencies. Not sure why they are called terminators, instead of dummy loads. I need to dissipate about 4 watts of power at 24.125 GHz as I build and debug my transverters. Most information I have found says that they are made up of sand and graphite. I sure most manufactures have a secret receipt they use as most are very expensive to buy. I suspect that the hardest part is getting characteristic impedance right.

The following web site has a cutaway picture that gives an idea what the high dollar; high power commercial units might look like:

http://www.radartutorial.eu/17.bauteile/bt42.en.html Thanks Rich KQ6EF

K2RIW has had good success at 10GHz with a pointed dowel that fits tightly in\ round waveguide--3/4" copper water pipe. Since you are talking about rectangular guide, you need something that will fit nicely. A piece of lath of a thickness that just fits the narrow dimension, and wide enough to fit the wide dimension, (cut to proper width), shaved to a point in both axes and stuck into the guide might do wonders for you. I would think it should be about 6 or 8 guide-widths long, but you could experiment cheaply!

Far out thought: How about a flat carpenter's pencil? Wood and graphite, and it should fit. Trouble is, it won't be a good fit, and some RF will probably leak around, if you care. Also, that may make for a strange impedance.-- Doug, WA2SAY

I have a 10 GHz terminator I have been using for years made from a .75 in copper pipe. At first I turned a piece of hardwood to a sharp point over 2 inches of taper. It didn't work. Next I took a piece of old mop handle made of pine that had been sitting outside for some years. That had a very good return loss. Norm http://N6JV.com

Rich, it's VERY easy to "waste" RF at Microwaves and you do not need anything special like a WR-42 Termination or WR-42 Attenuator.

All you need do is Transition your WR-42 PA Output port back to SMA.

Then you simply couple a "nominal" length of .141 or .085 Hardline or equivalent to this Transition and then terminate the Cable end with an SMA Coaxial Attenuator.

The losses of .141 & .085 @ 24 GHz are readily available on the Net but I would expect the "nominal" length of Hardline you will need is likely in the 1 to 2 meter range and the Coaxial Attenuator can be say 6 or 10 dB or more with 1 Watt, 18 GHz Spec's. Any impedance mismatch due a poor spec'd Attenuator will be "swamped" by the 50 Ohm Impedance of the longish Hardline. Cheers, Alan - VK3XPD.

Heck, don't need fancy Teflon UT coax to be a dummy load. A length of

RG-58 will work just fine for much less cost. Then the quality of the match depends on the match of the transition. RG-141 silver plated Teflon would be overkill. Actually a 100' roll of RG-58 makes a decent load as low as 432 MHz.

The match should be good through 24 GHz if its quality with lots of shielding. Radio Shack with 75% braid may not be so good a match. Seems like I've seen it reported that 100' of RG-58 will handle 1 KW if immersed in a bucket of water. Doesn't matter what the end opposite the transmitter is, a 2 volt lamp makes a handy indicator, but 10 dB insertion loss means 20 dB return loss if the end is shorted or open, better return loss if the end termination is matched better.

I've reports in MIT rad lab series on dummy loads. They used plaster of Paris loaded with carbon, plumbing cement, and other brews, all things they could make into a slurry and cast with the waveguide at an angle to make the load come to a point. I've seen it reported that rubber from a tire works well along with the several reports from Knadle and Britain using wood. Last year I tried making a 10G waveguide load to terminate a gas tube noise source. I was not successful with wood shaved to a sharp point or with truck tire rubber chunks carved in various shapes. I didn't try different woods. Oh, I was successful in getting maybe 8 to 12 dB return loss, but not it achieving 20+ dB return loss though a variable attenuator set for maximum attenuation achieved that very good return loss even with the other port of the attenuator left open. In fact it showed up the limited directivity of my directional coupler by showing a maximum return loss with slightly less than maximum attenuation. That's where the reflected power from the attenuator cancelled the forward power coupled to the reflected power port of the directional coupler. That lack of perfect directivity. There's where a sliding termination is used to detect the imperfect directivity of a directional coupler.

Attenuators are always good, though many at a Hamfest have been stressed by too much power or too hard an impact to be good at microwave. A termination is about the same as a dummy load, though the return loss of the termination should be better than the dummy load but it might no be capable of as much power.

I just acquired some terminations that arrived today made into N connectors, rated 1 watt. I didn't pay much. The maker's data sheet gives no RF data. Its test spec is at DC (100ma) 49.5 to 50.5 ohms. I suppose I'll check for return loss and maybe liberate the connector portion for some more useful task. I expect it’s a carbon film resistor with leads.

A coaxial resistor can be a good load, providing the characteristic impedance of the shield around the resistor has the same characteristic impedance as the resistance to ground. So the shield should taper to a point at the grounded end of the resistor. It’s not a straight taper, but a straight taper works better than no taper at all.

73, Jerry, K0CQ

I just use a horn pointed out the window - let the trees absorb it.

73 Paul

Courtney, N5BF looks at his power point pictures of Grail. The San Bernardino Microwave Society is a technical amateur radio club affiliated with the ARRL having a membership of over 90 amateurs from Hawaii and Alaska to the east coast and beyond. Dues are $15 per year, which includes a badge and monthly newsletter. Your mail label indicates your call followed by when your dues are due. Dues can be sent to the treasurer as listed in the banner on the front page. If you have material you would like in the newsletter, please send it to Bill, WA6QYR at 247 Rebel Road Ridgecrest, CA 93555 or, bburns@ridgenet.net, or phone 760-375-8566. The newsletter is generated about the 15th of the month and put into the mail at least the week prior to the meeting. This is your newsletter. SBMS Newsletter material can be copied as long as SBMS is identified as source.

San Bernardino Microwave Society newsletter
247 Rebel Road
Ridgecrest, CA
93555
USA